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ABSTRACT

Selected findings from a number of communication research projects conducted by, or in collaboration with, the Economic Studies and Research Institute (IEPE), Federal University of Rio Grande do Sul, Brazil, are reported. Communication research in IEPE during the past 4 years has concentrated on mass media performance and use, because extension agents were ignoring mass media, though they were using personal communication techniques ingeniously. A study was conducted that controlled for literacy and education and then investigated the effect of mass media exposure. It was found that literacy affected media use more than education. A substantially larger percentage of the mass media users than non-users were high adopters of farm practices. Two research projects were conducted concerning agricultural information received from radio, newspapers and magazines and the value of it. To study the potential role of newspapers, six relevant agricultural articles were sent to the newspapers in the state; it was concluded that newspapers are generally receptive to printing agricultural information when it is sent to them. Several readership, comprehension, and source credibility studies were conducted. A study of two infrastructural factors and the correlation between their restrictiveness and farmers' search for information supported the hypothesis that the amount of search for market and price information is inversely related to the restrictiveness of the market situation. (KM)

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COMMUNICATING WITH LOW-INCOME AND LOW EDUCATION FARMERS IN A DEVELOPING COUNTRY

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COMMUNICATING WITH LOW INCOME AND LOW EDUCATION FARMERS IN A DEVELOPING COUNTRY

Introduction

This paper reports selected findings from a number of communication research projects conducted by, or in collaboration with, the Economic Studies and Research Institute (IEPE), Federal University of Rio Grande do Sul, Brazil.

Since 1963, the University of Wisconsin, through USAID, has had a contract with the Federal University of Rio Grande do Sul, primarily for the purpose of developing graduate programs in the agricultural sciences. Most of the research reported here was conducted as a part of this program.

Characteristics of the area

Rio Grande do Sul is the southernmost state of Brazil. It is a leading agricultural state with wheat, rice, corn and soybeans being the main crops grown. Beef, hogs and sheep are the major livestock enterprises. Most of the studies reported here were conducted in areas of small, unmechanized farms. Literacy averaged about 80% and education about three years of schooling with very few having more than six years. Nearly all farmers marketed some produce. Income varied considerably, averaging below $1000 per year.

Communication behavior of agricultural change agents

An effective communication system involves two major aspects. First, the communication system itself must be developed, with its personal and impersonal channels available for message flows at all levels -- local to national. Second, there must be a regular flow of relevant, understandable information through these channels.

Agricultural development agencies, particularly those with extension activities, comprise a major part of the agricultural communication system. Bostian (1966) found that agents working for the three main agricultural development agencies in the state preferred to work almost exclusively with personal communication channels. Forty percent of the agents had over 500 visits to their office per year, and about half made more than 150 farm visits per year. In contrast, 60% made less than five radio talks the previous year; 50% sent less than five articles to radio stations; 60% never wrote for newspapers. These figures reflect communicator preference rather than media availability: 71% had newspapers published in their município, 87% had radio stations. The preference for personal communication was a function of the agencies' and agents' conviction in the preferability of using personal

channels, and agents' lack of technical training in using the mass media. Those trained in communication methods were significantly higher users of the mass media.

Hyman (1969), working with the same population three years later, found agent training and communication use similar to that reported by Bostian.

Mass media

During the past four years we have concentrated our communication research in IEPE on mass media performance and use. This is not because we do not recognize the relative greater importance of interpersonal communication in a country such as Brazil as compared to the U.S., for example. However, although extension agents were ingeniously using personal communication techniques, they were ignoring the mass media. Two brief examples will illustrate the former point. In one region, extension agents gave talks on improved farming techniques to rural youth as part of their training while serving in the army. In the same area, an agent interrupted a rural Saturday night dance and had an attentive audience for his speech on soil recuperation.

But most agents did not have contact with over 10% of the farmers in their municipio in any year. For the majority of this 10%, agent contacts were very infrequent.

The effects of these personal contacts, of course, no doubt went much farther than just to the 10% visited. Nevertheless, the mass media seemed to be an untapped resource which could aid in agricultural information programs.

Normally the mass media develop spontaneously first in the large urban centers. Here the media have advertiser support and a concentration of readers, listeners and viewers who have a relatively high literacy and educational level and a certain amount of buying power.

However, the interior of Rio Grande do Sul already has a widespread and well developed mass media system. It has 55 newspapers and over 100 radio stations. Television is starting to penetrate into some areas. In addition, half of the circulation of the five capital (Porto Alegre) newspaper is outside of the city.

Mass media use

The results of a number of studies in the state (Fachel, 1966; Schnieder, 1967; Sturm, 1968; Konzen, 1970; Fett, 1970) show that about 30% of the farmers read newspapers, 18% read magazines, and 85% listen to radio. A very small additional percentage have nespapers and magazines read to them.

As part of her research project conducted in both a high and a low agricultural production area in the state, Troller (1969) studied the tendency of nine antecedent variables to place a person in the mass media audience.

Using step-wise regression she found that mass media exposure was a function of a certain amount of economic means to secure them (level of living), desire for contact with the outside world (social participation and cosmopoliteness), and a tendency to be a high information seeker (knowledge of, or contact with change agents).

Note that neither literacy nor education entered into the three-variable formulas. This was not because of high correlations between these variables and those which did enter the formulas, but simply low correlations between literacy, education and mass media use.

Although literacy and education consistantly have been found to correlate with media use and various indicators of modernization, these correlations generally explain only a small amount of the variance.[1] This is not to argue against national programs of literacy training and educational improvement. But a lack of economic resources and trained personnel put massive programs of literacy training and school improvement beyond the reach of most developing countries. Furthermore, the results of such programs do not show an appreciable impact until a good number of years after they are initiated.

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[1] For a review of such studies see Rogers (1969).

This being the case, it becomes important to know if the mass media can aid development when the situation is one of low education and widespread illiteracy. Both radio and television can circumvent the illiteracy problem, although television is expensive, generally not available in rural areas, and carries little or no farm programming. There is growing evidence that illiterates can be reached by the print media (Deutschman, 1963; Frey, 1966; Brown, 1968; Rogers, 1969). Generally there is someone in the household who can, and often does, read to other family members.

It can be argued that such mass media exposure is of little value because of the inability of illiterates and low educated to intelligently process the information. Perhaps a certain level of education is needed to understand the vocabulary of the message, and literacy is required to deal with abstract ideas presented.

A number of studies have looked at the correlations between literacy, education and practice adoption; or mass media exposure and adoptiveness. But few have controlled for literacy and education and then investigated the effect of mass media exposure. Brown (1968) and Salazar (1970) did this with circular letters and found no significant difference in knowledge gain between literate and illiterate farmers in Chile and Mexico who received the circulars. In his Turkey studies, Frey (1966) found that mass media had a greater effect on

male illiterates than male literates.

In our study, we worked with secondary data from four previous studies conducted in four rural municipios in Rio Grande do Sul. Literacy was self-defined in three studies and verified by ability to read and write a short phrase in the fourth study. Farm practice adoption was measured by the adoption of a single practice (use of rural credit) in one study, and by scales of 14, 15 and 22 practices in the other three studies.

Chi-square analysis showed that education had little or no effect on the amount of radio listening. A difference did show up for the print media. However, the additional use by the high education group was not particularly great and was significant in only three of the eight cases. The increased use seemed to reflect a higher percentage of this group having the ability to read rather than any quest for information as a result of their few additional years of schooling. The fact that almost no difference was found for radio listening, which doesn't require literacy skills, supports this interpretation.

As expected, literacy affected media use more than education. However, a substantial percentage of the illiterates were in the high-use group for radio. Print media use by illiterates was low, but not eliminated.

Nine percent of the illiterates reported having newspaper exposure, and 6% received information from magazines. Although we do not have the supportive data, we suspect this is another instance of dependent literacy in which someone in the family or a neighbor read the material to the non-reader.

Media use and practice adoption

In nearly all cases, a substantially larger percentage of the mass media users than non-users were high adopters. Particularly interesting is the lack of effect of education on adoption. Low mass media users were equally apt to adopt, regardless of the amount of education they had. But for those who read newspapers and/or magazines, a greater percentage of the low educated were adopters than those in the high education group.

Quite possibly those with little education, but who read newspapers and magazines constitute a high motivation group. Even though they received little or no formal education, they have made the effort to learn how to read and to make use of this ability. This same high motivation accounts for their higher adoption rate.

For the illiterate groups, N's were too low to test for a relationship between mass media use and adoption. For the literates, high mass media use was definitely accompanied by higher adoption. For several of the 12 chi-squares the different was statistically significant.

It was encouraging to note that niether lack of education nor illiteracy constituted impenetrable barriers to the use of mass media by peasant farmers. Furthermore, such media exposure was associated with higher practice adoption.

The study just mentioned showed an association between media use and farm practice adoption. This is a common finding in many areas, and a consistent finding in our research in southern Brazil. Schneider (1970) found newspaper and magazine readership significantly related to the use of rural credit. Troller (1969) found significant correlations of .31 and .56 between mass media exposure and farm practice adoption for the two municipios she studied.

Although tempting, we have carefully avoided statements of cause and effect. Such statements may be justified, but without further information about what messages farmers are getting from the mass media, and to what use they are putting this information, we hesitate to make such claims. Although Schneider (1970) found print media use significantly associated with the use of rural credit, no farmer mentioned magazines and only 2% mentioned newspapers as the most important source from which they received information about farm credit without asking for it.

The effect of the mass media is not a result of mere channel exposure, but of the messages flowing in these channels. Although agricultural communication researchers have systematically studied the communicator, the channel and the receiver, the message, a key part of any communication model, has generally been ignored. Measures of content are almost never included in the research design.

Media messages

To get at the "message content and value" question we conducted two research projects. In the one study, we simply asked farmers what information they received from various mass media and what value this information had for them. In this study, the population was farmers in the municipio who subscribed to the local newspsper. This made them a group somewhat above average in terms of literacy, education, media use, etc.

Table 1. Farmers indication of the amount of agricultural information received from various mass media.

Amount of information received	Radio (N=111)	Newspapers (N=111)	Magazines (N=18)[a]
None	7%	8%	22%
Some	75	61	17
Considerable	18	31	61
	100%	100%	100%

a. Percentages based only on the 18 respondents who read magazines.

Table 2. Farmers' Indication of the Value of the Agricultural Information Received from Various Mass Media.[a]

Value of Information Received	Radio (N=103)[a]	Newspapers (N=100)[a]	Magazines (N=14)[a]
None	1%	2%	0%
Some	33	32	29
Considerable	66	66	71
	100%	100%	100%

a. N includes only those farmers who indicated having received agricultural information from the particular medium.

Although two-thirds of those receiving agricultural information from radio and newspapers considered this information to have high value for them, only about one-fourth thought these media had much agricultural information. If this were the typical situation for farmers throughout the state, we possibly might even take some comfort from these data. But, there are three reasons which dampen our spirits about these results. First, we were working with a high media-use group, not a random sample of all farmers. Second, the rural syndicate in the municipio regularly aired a farm program, and the extension office occasionally. Third, the local, bi-weekly newspaper published an agricultural page once a week. So we were working with an audience definitely above average in media use and in an area with more than average agricultural fare in the media.

Magazine readers rated magazines quite high on the amount and value of agricultural information. This is surprising in light of the fact that only five of the 18 magazine readers read agricultural magazines. Because of the low N, the results should be interpretted with caution.

In a second project to get at the message content and value question, we did a content analysis of all of the newspapers in the state (Fett, 1970). The study included one week's output of 50 newspapers published in the interior of the state and four published in the capital, Pôrto Alegre. Later random checks gave us confidence that our sampled week could be considered "typical". Pôrto Alegre and interior newspapers were analyzed separately on the hypothesis that the interior press is best able to give information on local agricultural problems, i.e., is in a better position to publish situationally relevant agricultural information.

During the week studied, Pôrto Alegre papers published 3,246 column inches of agricultural news; the interior newspapers published 4,629 column inches of such news. This represented respectively 5.3 percent and 8.3 percent of the total news hole.

In addition to coding agricultural news into seven content categories, we also coded it into three categories of relevancy. Information with high situational relevance was defined as information useful for farmers to make decisions in their farming operations. To be classified in this category the answer was "yes" to the question: "Is it reasonable to assume that at least some of the farmers living in the circulation area of this newspaper could benefit in their farming operation by having read this information? Could the information help them do something different?"

Information with a little situational relevance was that which potentially could affect farmers' agricultural operations. Having read the item they would be better informed about an agricultural situation in general, but the item did not have information which they could use directly in their farming activities.

Information with not situational relevance had no apparent present or potential value for farmers to do something different in their farm activities.

For the interior newspapers, 11.8 percent of the agricultural news was coded as having high situational relevance. For the Pôrto Alegre newspapers the percentage dropped to 5.5 percent, confirming our hypothesis.

Some of the other conclusions from the study were that farmers were widely informed through newspapers about governmental agricultural projects, laws, programs, etc. But how-to-do-it instructional articles were rare. News published by agricultural development agencies was not overtly public relations in nature, but it often reported or promoted new practices without instructing how to carry them out. Marketing information was almost nonexistent in the Rio Grande do Sul press.

Mass Media Potential

Recapitulating, we found mass media exposure to be high enough to warrant using them for informing farmers. Significant relationships existed between mass media use and farm practice adoption, but farmers' listing the mass media important sources of agricultural information was much rarer. A plausible conclusion is that farmers who use the mass media are more open to changes and have more resources to innovate, but the mass media are furnishing little information that is immediately relevant to farm problems. The content analysis findings support this view.

Feeling that we had pretty fair documentation on the present role and performance of the mass media, particularly newspapers, we shifted to looking at the potential role for newspapers.

Gatekeeper Study

Would the newspapers print more agricultural articles with situational relevance if these were made available to them?

Felstehausen (1969) interviewed urban newspaper editors in Colombia and found them reluctant to devote much space to agricultural problems because of a limited farm audience. This did not appear to be the case in Rio Grande do Sul. Conversations and correspondence with newspaper editors suggested that the quantity and quality of agricultural information published in the state was limited more by a scarcity of articles than by editorial decisions. This appeared to be true for the metropolitan press as well as the interior press. One of the capital city newspapers publishes a weekly agricultural supplement. During the week of the content analysis study, the five metropolitan newspapers published 16 pro-agriculture editorials.

One of the editors of the largest metropolitan newspaper said he would like to print more agricultural articles, particularly those of value to the small farmer.[2] Another editor in the interior told of the problems he had maintaining an agricultural page because of a lack of agricultural articles available, again, especially for small farmers.[3]

We felt that there was a willingness among editors to print agricultural articles, but that this desire was not so strong that they would go out and

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[2]Egon Frohlich interview with Paulo Annes Gonçalves, editor of Suplemento Rural for Correio do Povo, Feb. 1969.

[3]Personal letter from Adalberto F. Dreher, editor of Gazeta do Sul, published in Santa Cruz do Sul, Dec. 28, 1968.

get the articles themselves. One logical source for these articles would be local extension agents. But Bostian (1966) found that only about half of the extension agents in the state were ever asked for agricultural information by either newspapers or radio stations.

This lack of active search for agricultural stories may be a function of limited staffs and the nature of agricultural articles rather than a reflection of low editor interest in agricultural topics. Informational agricultural stories are generally feature articles and do not have the same immediacy or "newness" as a local sports, crime or political story. The typical weekly newspaper editor is simply too short of help to dig out the information for good instructional articles. They are occupied reporting the "news."

Based on this, we hypothesized that the majority of newspaper editors in Rio Grande do Sul would publish agricultural articles with situational relevance if these were received from reliable sources and the editors do not have to make an effort to receive these articles.

Six agricultural articles with situational relevance were written and sent to the newspapers in the state (one article per week). Articles were identified as news releases from the College of Agriculture, Federal University of Rio Grande do Sul. A photograph was sent with one article.

Before discussing results, we should mention some methodological problems. For the five Pôrto Alegre newspapers, we were able to read all papers published during the eight-week period in which we sent out the articles. But for the interior newspapers, we were able to obtain only 462 of the 876 published -- 52.7%. Hence, the publication rates reported are extrapolations from available data.

Three of the five Pôrto Alegre newspapers published at least one of the articles. However, considering all six articles, the average comes to .8 articles per newspaper for a publication rate of 7.5%. Interior newspapers published an average of 2.29 articles per newspaper for a 38% publication rate. Four of the ten newspapers using the story accompanied by a photograph printed the photograph. Two newspapers added photographs to another story, and one newspaper published the same article twice. Some papers printed the articles quite some time after receiving them which leads us to believe that the final publication rate was probably higher than that indicated here. Newspaper editors might also have been skeptical about receiving news releases for the first time from the university -- and receiving them without any letter or announcement of a new service starting. However, if this were true we would expect publishing rates to go up as the service continued, and this was not the case. More newspapers published the first article than any of the other five.

We conclude, then, that newspapers (particularly those in the interior) are generally receptive to printing agricultural information articles, although this receptivity is not as high as we had previously thought and hypothesized.

Readership study

Assuming that agricultural informational articles are made available to newspapers, and that they are published, another necessary condition in order that these articles have some effect is that they be read.

Measuring radio use, Bostian (1966) found that 45% of the farmers in one of the state's municipios most heard musical programs, 39% most heard news programs, and 16% most heard agricultural news. However, these data probably reflect the availability of various program content more than a preference for particular programming.

More directly related, Schneider (1967) found that "general news" was the first content preference of newspaper readers in the municipio of Ibirubá, with agricultural news and political news tied for second place.

To measure the real and relative interest in agricultural articles, we did a readership study of all articles appearing in one issue of a bi-weekly newspaper. Respondents were randomly selected farm subscribers to the newspaper. Reading was defined as having read 50% or more of the article.

For the nine agricultural aritcles published in the studied newspaper, readership ranged from 19% to 58% with an average of 42%. Readership of the 48 non-agricultural articles ranged from 12% to 67% with an average of 27%. We have not yet broken the non-agricultural news into content categories such as news, sports, society, etc. to determine the readership in each category. Considering only the agricultural and non-agricultural news, readership was higher (but significant only at the .10 level) for the agricultural articles.

Comprehension of technical information

Assuming that newspapers have access to agricultural articles, publish them, and that farmers read them, the next necessary condition for these articles to have an effect is that farmers understand them. Studies in the U.S. (Baxter, 1967; Felstehausen, 1964; Frederick, 1964; Sorenson, 1956; Sperbeck, 1967) have shown that writers of information for farmers often over-estimate the technical vocabulary of farmers.

We first read newspapers, agricultural magazines and extension publications to find technical or semi-technical terms used in communication to farmers. From this list we selected 10 technical terms widely used and having wide applicability, i.e., not connected with a special crop or extremely localized situation.

Farmers were given the terms to define in isolation -- not in the context of a sentence. We also asked editors and extension

agents from the same area of the state as the farmers interviewed how well they thought farmers understood the terms.

Table 3. Percent of farmers knowing selected technical terms, and editors and extension agents estimation of farmers' knowledge of these terms.

Term	Farmers correctly defining (N=111)	Editors' Estimate of percent of farmers knowing term (N=5)	Extension agents' estimate of percent of farmers knowing term (N=16)
Contour farming	65%	51%	65%
Hybrid	24	51	65
Erosion	27	58	64
Seed inoculation	23	28	37
Consortium (growing two crops together)	10	25	35
Artificial insemination	59	63	73
Liming (of the soil)	57	40	79
Soil correction or corrective fertilizing	28	49	57
Maintenance fertilizing	14	45	34
Crop rotation	21	47	58

Table 3 shows that only three of these widely used terms were understood by more than 30% of the farmers. Moreover, both editors and extension agents consistently overestimated farmers' comprehension of these terms. For these two groups, extension agents' estimates were most out of line.

In the readership study mentioned earlier, we wrote and "planted" three agricultural stories in the issue studied. In each case we thought that the articles were well organized and written in such a way that the majority of farmers would understand them. To test knowledge level, we asked two questions about each article.

Table 4. Readers' and non-readers' knowledge of information contained in the three published agricultural articles.

Question asked	Percent of respondents answering correctly	
	Readers[a]	Non-readers
We know that corn yields are higher on fertilized soil, but what happens to the percentage of protein in the corn?	48%	26%
What is the advantage of having higher protein corn when preparing rations?	12	7
From how many places should you take simple soil samples in order to make one composite soil sample?	22	15
What kind of container should you use to collect soil samples?	82	74
What is the minimum time that should elapse between applying lime and planting?	38	42
Why is it important to consider the fineness when buying lime?	40	23

[a] Here readers are defined as those who read all of the article.

Although readers did better than non-readers on the knowledge test, they still had problems answering the questions correctly. Part of the problem here was also due to the use of unfamiliar

technical terms. Few of the farmers, for example, had any idea what protein was. Some tried to make an association between this and vitamins, but most had no idea whatsoever. Clearly, most of the technical articles presently written for farmers in the state are not well understood by the majority of readers.

Source credibility

The source of a message can greatly influence how an individual accepts and interprets that message. This source credibility has two main dimensions: expertness and trustworthiness. Expertness refers to the perceived knowledge or intelligence of the source. Trustworthiness refers to the degree of confidence in the communicator's intentions. In the case of mass media, source credibility attaches to the channel as well as to the original source of the message.

In the study, we considered four personal sources and three media sources: neighbors, merchants, extension agents and university scientists; and radio, newspapers and magazines.

Extension agents were most indicated as the first choice for information as to what products to raise, what fertilizer to use, and how to obtain rural credit. Merchants were most indicated as the first choice for information about where to sell farm products.

Extension agents were indicated as the most expert and trustworthy source of information about new farming ideas. University scientists ranked second on both of these measures with neighbors and merchants trailing far behind.

Newspapers were considered both the most expert and trustworthy source for agricultural information. Radio was in second place on both measures. However, newspapers rated higher on trustworthiness than expertness; the opposite was true for radio. The permanency of the printed word apparently accounts for this: "If you see it in print it must be so." The low ratings for magazines was no doubt a function of the very limited contact with this medium rather than any particular distrust in it.[4]

Infrastructural factors and information search

A review of the literature shows numberous studies in several countries where the relationships between socio-economic variables and exposure to mass media among farmers were measured. Rarer are studies in which researchers looked at the individual decision process and factors in the process that affect the individual's search for instrumental information. An exception is Bordenave's (1963) study in northern Brazil. Bordenave found that the situational factor, "range of possible decision-making," was a far better predictor of intensity of search for instrumental information than his other four independent variables: dissatisfaction with the situation, perception of himself, perception of the possibilities for situation improvement, and activity for situation improvement. Although two of his independent variables included some infrastructural factors in their operationalization, the study

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[4] Because source credibility is a function of past experiences, extreme caution must be exercised in generalizing findings beyond the sampled population. This is particularly true where the range of contacts with a particular kind of source is fairly limited, such as extension agent and mass media sources.

was not primarily concerned with isolating the effects of these factors.

Infrastructural factors set the parameters within which the individual can make decisions and act. Within these parameters, information programs contribute to modernization to the extent that they identify the possibilities for action and the advantages and disadvantages of various courses of action. But as others (Brown, 1967; Morris, 1964; Grunig, 1969) have pointed out, even apparently relevant information may be useless if it does not fall within the infrastructurally set parameters or is not accompanied by infrastructural changes.

Through Q factor analysis, Grunig (1969) developed typologies of entrepreneurial and non-entrepreneurial rural decision makers in rural Colombia. He found that as the situation became less restricitve, allowing a wider range of possible decisions and action, information seeking and other communication variables became more important in determining the typologies.

It was beyond the scope of our project to study a large number or wide range of infrastructural factors and the correlation between the restrictiveness of these factors and farmers' search for information. Methodological considerations also excluded various infrastructural factors. Those included had to be 1) of concern to nearly all farmers in the municipio studied, and 2) this concern had to be nearly equal for all in the sampled population.

The two infrastructural factors selected on the basis of these criteria were: 1) the number of markets available in which farmers in the municipio could sell their products, and 2) the number of different or range of prices paid for various products.

For the five major products sold in the municipio studied the market and price situation is as follows, going from the most restrictive to the least restrictive situation:

Wheat: Price set by government through the Bank of Brazil, which is the only buyer.

Milk: Most is sold to one dairy although a few sell to individuals who deliver the milk in the city. The price is very low and often paid three to four months late.

Tobacco: Large number of buyers (about 20), but the price is set by one company and adopted by the others. Some companies are a bit more lenient in grading. This has the same effect as a slight price differential.

Swine: Although most go to one packing house, there are about eight buyers. Many of these have quite limited slaughter capacity. Prices vary some between buyers.

Soybeans: About 12 buyers, most of whom have considerable capacity. Prices vary between buyers.

An individual's behavior is of course, directed more by his perception of the situation than any outside assessment of what the true situation is. Because of this, we included questions to measure how the individual farmers viewed the restrictiveness of the marketing situation for the products they sold.

Data were collected from each respondent on the two products he sold which brought him the highest gross income. Of the 111 farmers interviewed, 87 sold two or more products and this constitutes the N for most of the results reported here. Analysis of this part of the study is not yet completed so we can only present preliminary results.

As mentioned earlier in this paper, some farmers are inherently greater information seekers than others. Those who are heavy users of one mass medium tend to use all mass media, and are also high information seekers from personal channels. To control for this, we let each person act as his own control and investigated the difference in his information seeking behavior between the two products which he sold.

The results shown in Table 5 are clearly in support of the hypothesis that the amount of search for market and price information is inversely related to the restrictiveness of the market situation. For all of the items, the results are in the predicted direction. Table 6 gives further support to the

Table 5. Relative difference in farmers' knowledge, information seeking behavior and attitudes for two products sold.[a]

Item	Times value higher for most restrictive market	Times value equal	Times value higher for least restrictive market
No. of sources from which received price information without asking	35	28	24
No. of sources from which asked price information	8	36	43
No. of times asked price information from farmers	4	72	11
No. of times asked price information from company where sold product	5	65	17
No. of times asked price information from other companies	1	77	9
No. of times asked price information from stores or intermediary buyers	8	47	32
No. of markets in which farmer knew price paid for product	23	23	41
Attitude questions (high score indicates higher agreement)			
Choice of markets in which to sell product is sufficient	20	39	28
Useless to search for markets because the price is the same in all	24	49	14
Considering everything (buyers, prices, transportation) situation is good for selling product	24	33	30
Monthly bulletin listing all buyers and prices would be valuable in deciding where to sell product	14	48	25

a. How to read table, using first item as example: Considering price information received without asking, 35 farmers received such information from a wider variety of sources for the product they sold in the less restrictive market, 28 received such information from an equal number of sources for both products sold, 24 received such information from a larger number of sources for the product they sold in the least restrictive market.

hypothesis. Even though there are more markets for tobacco than for any other product studied in the municipio, tobacco growers gave least value to a monthly bulletin that would list all buyers and prices.

Table 6. Responses to the question: "If once a month you could receive a bulletin listing all buyers and prices for (product) in this region, how valuable would this information be to help you decide where to sell your (product)?"

	Milk producers (N=22)	Tobacco growers (N=75)	Swine producers (N=62)	Soybean growers (N=35)
Extremely valuable	5%	5%	10%	11%
Very valuable	32	35	40	54
Valuable	41	28	27	31
Almost without value	14	20	11	3
Without value	9	12	11	0
	101%[a]	100%	99%[a]	99%[a]

* Wheat was not included because only two farmers sold wheat. Of these, one indicated that such a bulletin would be "valuable," the other, "without value."

a. Columns do not total 100% due to rounding errors.

We acknowledge that further analysis must be done to control for information received without asking, number of sources available from which a farmer could receive information, etc. However, preliminary analysis along these lines has not changed our conclusions drawn from data presented in Tables 5 and 6.

Farmer information programs aid agricultural development to the extent that they point out opportunities that a peasant farmer may have overlooked and show what he can do to take advantage of them. But information alone can not produce these opportunities. Where infrastructural factors do not permit a choice of action, the peasant farmer (rationally) seeks little information.

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